MAK SPIROL LL 80W-90

Long life superior quality API GL-4 oil for manual transmissions

MAK Spirol LL 80W-90 is a superior quality long life new generation gear oil meant for high drain period. It is formulated from high quality base stocks and advanced additive technologies. This oil exhibits improved performance against wear and other surface damages, offers protection against oxidation and corrosion for steel and copper based alloys. This lubricant is engineered for high performance in modern synchromesh gearboxes where extreme pressure performance and extended drain life are expected. It facilitates easy gear shifting even at a very low ambient temperature.

Applications:
MAK Spirol LL 80W-90 provides excellent lubrication of manual gear boxes of passenger cars, buses, trucks operating under high speed-low torque and low speed-high torque conditions. It is suitable for synchromesh gear box/transaxle of commercial vehicles. As compared to market general GL-4 type oils MAK Spirol LL 80W-90 offers extended oil drain life of up to 72000 km in synchromesh gearbox of commercial vehicles. This oil is approved by **M/s TATA Motors** for use in their commercial vehicles.

Performance/ Benefits:
Long Oil Life – resists the effects of oxidising agents, thermal degradation, prevents deposit formation and oil thickening. Offers extended drain interval when used in commercial vehicle manual transmissions

Superior Gear Teeth Protection – offers excellent protection of gears against wear. Reduces downtime and maintenance cost.

High Shear Stability – offers superior shear stability and provides excellent protection during the entire life of the lubricant.

High Resistance to Foaming – exhibits low foaming characteristics and maintains oil film for reduced wear.

Excellent Rust and Corrosion Protection – reduces corrosion wear and maintenance cost and enhances transmission system life.

Excellent Seal Compatibility – offers extended life of seal, minimum leakage and reduced contamination.

Low Temperature Lubrication – reduces wear and facilitates easy start-up and gear shifting at low ambient temperatures.

Performance Level/ Specification:
- API GL-4
- IS 1118:1992 (Reaffirmed 2016)

Typical Physico-Chemical Data: MAK Spirol LL 80W-90

Characteristics	Method	Value
SAE Viscosity Grade	SAE J306	80W-90
Color	Visual	Brown
Appearance	Visual	Clear and Bright
Density @15^{O}C, g/cc	ASTM D1298	0.882
Kinematic Viscosity @40^{O}C, cSt	ASTM D445	130.11
Kinematic Viscosity @100^{O}C, cSt	ASTM D445	14.51
Viscosity Index	ASTM D2270	112
Copper Corrosion, 100^{O}C, 3 hrs.	ASTM D130	1b
Flash Point, ^{O}C	ASTM D92	238
Pour Point, ^{O}C	ASTM D97	-27
Foaming Tendency a) Sequence I b) Sequence II c) Sequence III	ASTM D892	 NIL/ NIL 10/ NIL NIL/ NIL

Storage & Handling:
The product should be stored inside. Keep it properly sealed to avoid contamination. Avoid freezing. Shelf life is 5 yrs. under protected storage conditions.

Health & Safety:
It is unlikely to be hazardous when properly used in recommended applications. Contamination of the oil from other oils, greases, chemicals, dirty water etc. can occur during the use. It should be avoided. Regular monitoring of the in-use product is recommended.

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